

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGUIRE NUCLEAR STATION, UNIT 1	DOCKET NUMBER (2) 0 5 0 0 0 3 6 9	PAGE (3) 1 OF 0 6
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TITLE (4) A NUCLEAR SERVICE WATER SYSTEM ISOLATION VALVE WAS NOT TESTED FOLLOWING MAINTENANCE AS REQUIRED BY TECH SPEC 4.0.5 DUE TO PERSONNEL ERROR

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
03	28	88	88	006	00	04	27	88	N/A		0 5 0 0 0

OPERATING MODE (8) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.405(e)	50.73(a)(2)(iv)	73.71(b)						
	20.405(a)(1)(ii)	50.38(c)(1)	50.73(a)(2)(v)	73.71(c)						
	20.405(a)(1)(iii)	50.38(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	20.405(a)(1)(iv)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)							
	20.405(a)(1)(v)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)							
20.405(a)(1)(vi)	50.73(a)(2)(iii)	50.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER
NAME STEVEN E. LE ROY, LICENSING		AREA CODE 7 1 0 4 3 7 2 - 1 6 1 8 1 3

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

ABSTRACT (Limit to 140 words, i.e., approximately fifteen single-space typewritten lines) (16)

On 03/26/88, Maintenance (MNT) was preparing to adjust the packing glands on valve 1RN-21A, Nuclear Service Water (RN) Strainer 1A Backflush Auto Supply Isolation, and valve 1RN-22A, RN Strainer 1A Backflush Auto Drain. While reviewing the work requests (WR) prior to starting work, MNT noticed that on 02/04/88, the packing gland on valve 1RN-21A had been adjusted, and that a valve stroke timing test had not been performed after the job was completed. This test is required to be performed after any maintenance that may alter the stroke timing of the valve. Control Room personnel were notified. At the time of the discovery, Train A of the Unit 1 RN system had been declared inoperable because Performance (PRF) was conducting a flow balance test. The WR for valve 1RN-21A was added to the Unit 1 Tech. Spec. Action Item Logbook for Train A of the Unit 1 RN system on 03/28/88 at 2300. On the morning of 03/29/88, PRF successfully conducted a stroke timing test of valve 1RN-21A. Train A of the Unit 1 RN system was returned to operable status at 1330 on 03/29/88, when the flow balance test was completed. A Cause of Personnel Error was assigned to this event because Planner A failed to recognize the need for valve 1RN-21A to have a stroke timing test after maintenance and did not note the retest on the WR. Also, Planner B, who checked the work of Planner A, failed to notice the error while reviewing the WR. Signs will be affixed to ESF valves to inform personnel of required testing following maintenance. Appropriate personnel will be required to review this event report.

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McGUIRE NUCLEAR STATION, UNIT 1	0500036988	00	6		02	OF	06

TEXT (if more space is required, use additional NRC Form 388A) (17)

INTRODUCTION:

During the evening of March 28, 1988, Mechanical Maintenance (MNT) personnel were preparing to adjust the packing glands on valve 1RN-21A [EIIS:V], Nuclear Service Water (RN) System [EIIS:BI] Strainer 1A Backflush Auto Supply Isolation, and valve 1RN-22A [EIIS:V], RN System Strainer 1A Backflush Auto Drain. While reviewing both work requests prior to beginning the work, MNT personnel noticed that on February 4, 1988, during previous work, other MNT personnel had adjusted the packing gland on valve 1RN-21A. MNT personnel also noted that a valve stroke timing test had not been performed by Performance after the earlier work was completed. This test is required by Technical Specification (TS) 4.0.5 to be performed after any maintenance that may alter the stroke timing of the valve. MNT personnel notified the Shift Engineer, who notified Operations Control Room personnel. At the time of the discovery of the missed test, Train A of the Unit 1 RN system had already been declared inoperable because Performance was conducting a flow balance test. The work request for valve 1RN-21A was added to the Unit 1 Technical Specification Action Item Logbook entry for Train A of the Unit 1 RN system by Operations Control Room personnel on March 28, 1988 at 2300. On the morning of March 29, 1988, Performance personnel successfully conducted a stroke timing test of valve 1RN-21A. Train A of the Unit 1 RN system was returned to operable status at 1330 on March 29, 1988 when the flow balance was completed.

Unit 1 was in Mode 1, Power Operation, at 100% power at the time this event was discovered.

A Cause of Personnel Error has been assigned to this event because Construction and Maintenance Department (CMD) Planner A failed to recognize the need for valve 1RN-21A to have a stroke timing test after maintenance and therefore did not note on the work request that a retest was required. Also, MNT Planner B, who checked the work of CMD Planner A, failed to notice the omission while reviewing the work request.

EVALUATION:

Background

The RN system provides assured cooling water for various Auxiliary and Reactor Building heat exchangers [EIIS:HX] during all phases of plant operation. Each unit has two redundant essential headers serving equipment necessary for safe plant shutdown normally or as a result of a postulated Loss of Coolant Accident (LOCA). Each train of the RN system is equipped with a strainer [EIIS:STR] at the suction of the pump [EIIS:P] that backwashes automatically at specified time intervals. When automatic backwash is initiated on Train A of Unit 1, valve 1RN-21A and valve 1RN-22A open to backwash the strainer to the Condenser Circulating Water system [EIIS:SQ] discharge crossover. These two valves receive an Engineered Safety Features (ESF) [EIIS:JE] signal to automatically close in

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

the event of a LOCA or Unit Blackout to prevent continuous strainer backwash, which would reduce flow to safety related components during an ESF actuation.

Valve 1RN-21A is an air operated 6 inch gate valve, manufactured by Pacific Valves, Inc., model number 5-742-F, designed to fail to the closed position.

#### Description of Event

On January 29, 1988, while planning Work Request 134015 to adjust the packing gland on valve 1RN-21A, CMD Planner A completed the entry on the work request in section II that notes requirements for retest after the maintenance work is completed. CMD Planner A marked this line to indicate that no retest was required. Subsequent to this, MNT Planner B was asked by CMD Planner A to review the work request to verify its accuracy. This review was done routinely because CMD Planner A was still in training. MNT Planner B then reviewed the work request for accuracy and initialled section II as being correct.

On February 4, 1988, MNT personnel attempted to adjust the packing gland on valve 1RN-21A as directed by Work Request 134015. The packing gland adjustment did not stop the leak around the valve stem. MNT personnel rescheduled the work request to Planning to be rescheduled for a packing gland adjustment by MNT at a later date.

On March 28, 1988 at 1530, Train A of the Unit 1 RN system was declared inoperable for Performance to perform a routine quarterly flow balance test. MNT night shift personnel were repairing the packing on the shaft of the RN system strainer while Train A of the RN system was inoperable. Valves 1RN-21A and 1RN-22A were scheduled to have the packing glands adjusted the following night. MNT night shift personnel decided that while they were in the area of valves 1RN-21A and 1RN-22A working on the strainer, they would also adjust the packing glands on these valves. While reviewing Work Requests 134015 and 132021 for valves 1RN-21A and 1RN-22A, respectively, the MNT Shift Supervisor noticed that Work Request 132021 for valve 1RN-22A required a stroke timing test to be performed after the packing gland adjustment. This same test was not marked as required on Work Request 134015 for valve 1RN-21A. The MNT Shift Supervisor consulted with Planning Shift personnel and determined by referencing Station Directive 3.2.2, Identifying and Performing Plant Retesting, that a stroke timing test was required for valve 1RN-21A. MNT night shift personnel corrected the error by marking Work Request 134015 as requiring a retest and then adjusted the packing glands on valves 1RN-21A and 1RN-22A.

During the morning of March 29, 1988, Performance personnel were notified that valves 1RN-21A and 1RN-22A had packing gland adjustments the previous night and would need stroke timing tests. Performance personnel then successfully completed a stroke timing test of valve 1RN-22A. The first time valve 1RN-21A was stroked for a timing test on the morning of March 29, 1988, it would not move completely from the fully open to the fully closed position. MNT personnel loosened the packing gland. The second time valve 1RN-21A was stroked on the

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

same morning, it moved from the fully open to the fully closed position in 14.2 seconds. This was much longer than the previous recorded stroke time of 8.0 seconds on September 30, 1987, but within the 60 second time required by RN Valve Stroke Timing - Shutdown procedure. MNT personnel adjusted the packing gland again and lubricated the valve stem on valve 1RN-21A. The third time valve 1RN-21A was stroked on the same morning, it moved from the fully open to the fully closed position in 13.8 seconds. Performance personnel decided this time would be acceptable to return the valve to operable status, but since the 13.8 second stroke time represented an increase of greater than 25 percent over the most recent stroke time, valve 1RN-21A would be tested monthly as required by the Inservice Valve Testing Program until the stroke time improved or repair work to improve the stroke time could be performed.

On March 29, 1988 at 1330, Train A of the Unit 1 RN system was returned to operable status by Operations personnel after they were notified by Performance that the flow balance test and valve stroke timing tests were successfully completed.

Conclusion

This event has been assigned a Cause of Personnel Error because CMD Planner A failed to recognize that valve 1RN-21A is a valve that requires a stroke timing test following maintenance. MNT Planner B also failed to recognize this test requirement during a review of the work request. MNT Planner B incorrectly assumed that CMD Planner A had completed the work request correctly because CMD Planner A had been assigned to the Planning Department for approximately one year and his training was nearly complete. Both Planners were made aware of Station Directive 3.2.2, Identifying And Performing Plant Retesting, during their initial on the job training. This station directive includes a list of all valves that are required to be tested following maintenance. The Planners failed to reference this document while planning or reviewing Work Request 134015. Station Directive 3.2.2 is used routinely by Planning personnel to assist in making a determination for testing requirements of station components. CMD Planner A, while planning Work Request 134015, felt hurried because of a backlog of work requests; however; the backlog on January 29, 1988 was not abnormal and no other mitigating circumstances for this error could be found.

During the period from February 4, 1988 to March 28, 1988, valve 1RN-21A stroked automatically from closed to open and back to closed many times as part of the automatic cycle of the RN system strainer backwash. These position changes are recorded on the Unit 1 Operator Aid Computer (OAC) Alarm Typer by means of limit switches for the open and closed positions on the valve. Nine operating cycles of valve 1RN-21A were randomly chosen from the OAC Alarm Typer printout from February 6, 1988 and from March 12, 1988. The time shown from the fully open to the fully closed position was approximately 10 seconds in each of the nine cases. This time was within the 60 seconds required by the valve 1RN-21A timing requirements of the RN Valve Stroke Timing - Shutdown procedure. Therefore, valve 1RN-21A was apparently capable of performing its safety function

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TEXT (if more space is required, use additional NRC Form 368A's) (17)

(to move from fully open to fully closed in less than 60 seconds) during the period from February 4, 1988 to March 28, 1988.

A review of McGuire Licensee Event Reports (LERs) revealed 3 events of missed TS required retests attributed to a cause of personnel error; therefore, this event is considered to be recurring. LER 50-369/85-31 involved a missed Performance retest on Hydrogen Recombiner 1B because personnel did not properly review the work request prior to completion. LER 50-369/87-27 involved a missed Performance retest on valve 1RN-235B also because personnel did not properly review the work request prior to completion. The corrective actions for these two past events involved emphasizing with Operations, Instrumentation and Electrical, and MNT personnel the importance of properly reviewing a work request prior to completion. These corrective actions would not have prevented this event from occurring. LER 50-369/85-39-01 involved a missed Performance retest on the Spent Fuel Pool Ventilation System [EIIS:DA] because Planning personnel failed to determine that a retest was necessary. The corrective action for LER 50-369/85-39-01 was to emphasize with Planning personnel the proper method to determine retest requirements for station components. Because the event described in LER 50-369/85-39-01 occurred approximately two years ago and CMD Planner A and MNT Planner B have both been in the Planning Department for approximately one year, the need for paying careful attention to retest requirements will be reiterated.

This event is not reportable to the Nuclear Plant Reliability Data System (NPRDS).

CORRECTIVE ACTIONS:

- Immediate: Valve 1RN-21A was successfully stroke time tested prior to returning Train A of the Unit 1 RN system to service.
- Subsequent: None
- Planned:
- 1) Appropriate MNT and Instrumentation and Electrical Planning personnel will be required to review this event report.
  - 2) CMD Planning personnel will be required to review this event report.
  - 3) Projects Services personnel will ensure that signs are affixed to all ESF valves. These signs will inform personnel that the valve is an ESF valve and requires a retest after any maintenance work.

SAFETY ANALYSIS:

The RN system provides assured cooling water for various Auxiliary and Reactor Building heat exchangers for safe plant shutdown following a LOCA. There is a

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required minimum amount of flow of 12,400 gpm to ensure that all design criteria are met. Valve 1RN-21A is required to close to prevent excessive flow diversion and help ensure the minimum flow requirements are met. If valve 1RN-21A were to fail in the open position, a recirculation path would exist from the discharge of the RN pump, through valve 1RN-21A, into the strainer and back to the suction of the pump. There would be approximately 700 gpm flow through this flow path. This would be a loss of approximately 700 gpm flow from the heat exchangers served by the RN system. This amount of flow is not significant enough to cause a serious degradation of system performance. During the period of time of this event, RN system temperature was approximately 50 degrees-F. This would allow for heat transfer capacity much better than predicted by the accident analysis and would more than offset the degradation caused by the loss of approximately 700 gpm flow.

Valve 1RN-21A was capable of closing during the time of this event as documented by the Unit 1 OAC Alarm Typer. Also, the heat removal capability of the RN system was not challenged by a LOCA or any similar occurrence.

There were no personnel injuries, radiation overexposures, or releases of radioactivity as a result of this event.

This event is considered to be of no significance with respect to the health and safety of the public.

DUKE POWER COMPANY

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HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

April 27, 1988

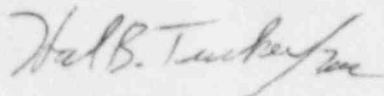
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Unit 1  
Docket No. 50-369  
Licensee Event Report 369/88-06

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/88-06 concerning a failure to test a Nuclear Service Water system valve following maintenance as required by Technical Specification 4.0.5 due to personnel error. This report is being submitted in accordance with 10CFR 50.73(a)(2)(i)(B). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

SEL/267/jgc

Attachment

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